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Performance Record Citrus Trees

★ MAY 7 ★

What Constitutes a Performance Record Tree?

IN THE ORCHARD:

A systematic record of the amount of fruit produced by each individual parent tree——

IN THE NURSERY:

A systematic record proving the parentage of each individual tree in nursery rows.

F. H. Nusbickel
PERFORMANCE RECORD
TREES

Glendora, California
Telephone 388

1917

Cause and Effect

The Problem:

—the Elimination of Unprofitable Trees and the Selection of Productive Trees—

The Factor:

—the Best Type of Tree bears the Highest Quality of Fruit; this may be associated with the Greatest Quantity of Fruit—

The Result:

—Quantity and High Quality mean PROFIT—

The Place:

—F. H. NUSBICKEL, Glendora, California. Telephone 388.

THE CITRUS TREE PROBLEM IN PROFIT AND LOSS

QUALITY AND PRODUCTION

Growers of citrus fruits are awakening to the great difference in production between individual trees in their groves. They find a tree bearing one box of indifferent quality fruit by the side of a tree bearing ten boxes of high quality fruit; both trees having the same care. Records show that the low producing tree usually bears inferior while the highly productive one always yields high quality fruit. The chief concern of the planter is to obtain uniformly highly productive trees.

IMPROVEMENT IN SEED AND BUD PROPAGATED PLANTS

Close observation and investigation as between productive and non-productive orchard trees shows that they differ greatly in character of wood, growth, length of growth, framework, leaves, spacing of leaves, and fruit. In fact, several different types of the same varieties are clearly defined. It is now recognized by all authorities on plant life that throughout the plant kingdom any variety of plants is composed of many types. Some of these are superior types while many are inferior. They do not look alike and they do not produce offspring alike. Certain of these have the ability to reproduce their superiority and thereby produce a race of individuals above the average. This fact is well shown by the results obtained in timothy breeding in New York State where, through the selec-

tion of seed from high yielding individuals, a new timothy has been produced which for four years has yielded a ton per acre more than the best commercial variety. What is true of timothy is true of other farm seeds, such as wheat and oats, where decided increases in yields have been obtained through breeding from the Shakespeares of the race. This has been recognized in the Middle West, where high bred seed corn brings a higher price than does the mongrel seed, and in the Imperial Valley, where selected cotton seed is at a premium. What is true of seed propagated plants is also true of potatoes, which are reproduced by buds. When seed potatoes are selected from hills having the ability to produce large yields, a strain of high-yielding tubers is obtained. One Colorado grower has not only doubled the yield on a large acreage of potatoes by this method, but has also doubled his selling price per bushel by reason of the uniformity and high quality of the crop. Discriminating buyers are always glad to pay for the best.

Another illustration of raising the standard by bud variation is that of the sugar cane. It is now established beyond reasonable doubt that certain of the more valuable cultivated varieties have originated by this method. If such is the case for seed propagated plants, and even a bud propagated plant like the potato and the sugar cane, why is it not possible for other bud propagated plants, as are all tree fruits?

BREEDING IN CITRUS FRUITS PRACTICAL

About seven years ago Mr. A. D. Shamel was sent to Southern California by the Department of Agriculture to make a study of the possibilities of improving production in citrus trees. By selection and propagation from the most productive and desirable individual plants he had already attained nation-wide recognition for his improving the tobacco plant in Connecticut and also the corn in the Middle West. This principle of selection from individuals of superior merit was

formerly confined to the breeding of cattle and annual plants. The millions of dollars added to the cattle, dairy, corn and cotton industries are substantial proofs that the breeding paid. It remained for Mr. Shamel to make the practical application of this principle to citrus fruit trees. The remarkable results he has obtained by budding over unprofitable trees with buds from high performance record trees is conclusive proof that the future of individual grove owners is largely dependent upon the proper bud selection of their stock. In recent plantings of nursery trees propagated from performance record parents the number of unproductive trees is conspicuously lessened. In comparison with annual crops, tree selection is most important, inasmuch as the type of a tree does not change in its lifetime of twenty-five to fifty years.

WHAT IS A PERFORMANCE RECORD TREE?

Performance records of trees in a grove are kept by weighing the fruit from each tree separately at each picking, and by keeping accurate data of the different individual yields. Mr. Shamel has perfected a system for this work. Close adherence to it gives easy results. A brief description is as follows: First the trees are numbered and the numbers painted on the trunks of the trees. The trees are divided in blocks, rows, and trees in row. Thus a tree numbered

5
26
7

would be located in block 5, row 26, and the seventh tree in the row, always beginning at a given point. In this manner no trees can have duplicate numbers. There need be no confusion as each tree has its numbers painted on its trunk. Boxes are distributed to each tree. One picker picks a tree and places all the fruit from that tree in boxes which are kept separate until its record has been taken, the value of which is dependent upon the accuracy with which it is made.

"SPOTTING" THE DRONES

It has been found from weighing fruit from individual trees at each picking for four years in a profitable grove that "the difference in actual net returns to the packing house for the fruit from the highest producing trees over that of the lowest producers was $517.77 per acre annually." A striking comparison as between the workers in an orchard and the drones. The inferior fruit these latter produce not only lessens profits but prejudices the judgment of buyers against the better fruit. Progressive growers are weighing the fruit from each individual tree in order to find the drones. Indeed, in some cases they find, even in profitable groves, as high as 48 per cent of unprofitable bearers of only medium quality fruit. By budding over the drones with buds taken from trees of known superior productivity a whole grove can be made uniformly productive. Any increase in production from such budding all goes to enhance profits; because it costs no more to maintain the trees in their new productive condition than it did when in their unproductive state. High producing trees are of superior value not only because of their greater production but also because of their larger proportion of desirable sizes and first quality fruits. Investigations show that the best producers in one year are usually so during a series of years.

The older groves are closely related to the original parent trees and therefore show less variation than the younger groves removed many generations. It is essential that we now be more careful in the selection of our propagating wood to overcome our remoteness from the original parents and the great number of variations developed since then.

POSSIBILITIES OF IMPROVEMENT

Growers are awakening to the tremendous possibilities of improving their trees. You should be interested in getting the best start for your

grove. After cultivating it for six or seven years you cannot afford to be disappointed by a high percentage of unproductive trees.

Mr. J. P. Englehardt, a pioneer lemon grower of Glendora, is one of the few men who have watched the individual trees in their groves with sufficient care through a long period of years, hence know the best producing specimens. His grove is small, and the trees have been watched by Mr. Englehardt much as a mother would her children.

At the start of work in the nursery business we became interested in the results being obtained by Mr. Shamel, and also became acquainted with the grove belonging to Mr. Englehardt. Through the co-operation of Mr. Englehardt we have secured buds from the best trees in his grove for the propagation of stock. Mr. Englehardt has given his aid, both in helping pick out the trees of superior productivity and in the selection of the bud wood.

During the past four years we have made further progress by securing, through the co-operation of the San Dimas Lemon Association, actual performance records of the trees in Mr. Englehardt's grove for the purpose of still further determining the best trees from which to use buds. These performance records are made by weighing the fruit from each individual tree, separately, at each picking. In this way we have been able to produce nursery trees from the best trees in this, one of the best groves of the district, and probably of the state.

In addition we are now keeping performance records on Marsh's Seedless Grape Fruit, Washington Navel and Valencia oranges, and the Eureka lemon.

ESSENTIALS IN PROPER BUD SELECTION

1. A performance record, which is the only way to accurately determine the good bearing trees yielding quality fruit.

2. Selection. It is essential for the best results to use good judgment in the selection of buds even from record trees, for not all the wood on a given tree is suitable for propagating purposes. Objectional coarse wood is found on record trees. The intelligent nurseryman will not use this wood. Between the coarse wood and the fruit wood there are several grades such as "white wood," which develops more pith and coarser cells, both in the wood as well as in the fruit. While it may bear good fruit for a limited time we believe it deteriorates as it grows older and becomes unprofitable. Also we believe that the fruit it bears does not have the keeping qualities that the fruit with finer cells has which is borne on the harder, finer grained fruit wood. The best is only the fine fruit wood. To be positive of good selection a fancy fruit is taken. This is cut together with the short fruit spur bearing the fruit. Back of the fruit on the fruit spur there will be found several very desirable small buds. It has been proven conclusively that these few buds used in propagation make productive trees of high quality fruit. Thus it is seen that to get the best results it is necessary to supplement the record performance trees with good selection of bud wood. On the other hand, good selection of buds, unless from record performance trees, may be disappointing. Selected buds is a step in the right direction; but to get the best results we must go farther. We must get buds selected with good judgment from the best trees where an accurate performance record has been kept, to determine their quality. When we get our budwood we keep the buds from each tree separate and segregate it in the nursery row, keeping it distinct by labels in the field and with careful records in the office. Each year has witnessed a decided improvement in methods and we now feel that we have accurate data. We especially emphasize the time value of these records. No one can buy records. They can be obtained only by the careful work of several successive years.

RESULTS OF PROPER SELECTION

The care and extra expense entailed in keeping the record warrants us in expecting a great increase in the productivity of trees propagated in this manner. There are some trees already coming into bearing which warrant this conclusion. Particularly some unproductive lemon trees which were rebudded from better trees at Corona, under the direction of Mr. Shamel.

A conservative estimate of the increased productivity of the groves warrants the expectation of doubling the net returns of groves selected in this manner. We feel, also, that the intelligent buyer of young trees will expect to pay more money for trees propagated in this manner, and that he is entitled to an assurance that the buds were honestly selected from trees of superior merit. The production of your future grove is governed by the type of trees which you now plant. A wise choice now is an investment which will be a valuable asset to you and to the next generation.

If you want this kind of stock, we can interest and convince you that we have made the most careful selection, and that our trees are the best which are available.

A NOTE OF WARNING.

We wish to add a note of warning to prospective planters. Occasionally a man is found who thinks all that is necessary for a good productive grove, is to purchase the right kind of trees. That is not so. Trees after being planted in good holes need water, cultivation and other requirements at the proper time, and at regular intervals. A case in point where a grove was planted partly to improved trees and partly to ordinary nursery stock. The owner now finds that the ordinary trees require about two-thirds more pruning than the improved. This difference in labor will unboubtedly save the cost of the tree by the time it comes into bearing. Nevertheless it is essential that the improved trees have intelligent pruning. Do not allow a pruner to come into your grove and sacrifice the slow-growing fruit wood.

WHICH CLASS?

If you are planting trees, which class do you wish to own when they are from six to ten years of age?

The trees that bear at an early age, thereby reducing their cost, *or*

The trees that are slow to bear and then have to be rebudded with a loss of four years?

The trees that utilize their energy in producing fruit wood with less "suckers," *or*

The trees that waste their energy in producing long stretches of wood that bear a small quantity of inferior fruit, and require constant pruning?

The trees that will respond to fertilizer, water, and proper attention by giving a good quantity of high quality fruit, *or*

The trees that do not respond to the best of care because not of the right type to produce high quality fruit?

The trees that produce $1,000 and up per acre net, *or*

The trees that do not pay for their water and care?

PROFIT OR LOSS?

WITH increased acreage coming into bearing *common* trees may produce at a loss, when trees of high productivity will show a handsome profit. The difference betwen the cost of production and the selling price, is your profit or loss. The best type of tree produces the greatest quantity of high quality fruit at the least cost.

Are you planting with a fair chance of profit, or are you planting with a prospect of a loss?

F. H. Nusbickel

GLENWOOD AVENUE

Home Phone 388

GLENDORA, CAL.

Citrus Trees

——We have for spring delivery a few thousand

Eureka Lemon Trees
Washington Navels
Valencia Lates
Marsh Seedless Grape Fruit

Buds from performance trees for re-budding orchards.

Our stock is healthy, clean, straight and vigorous.

Write for our prices.

F. H. NUSBICKEL,
GLENDORA, CAL.